REPORT OF ENGINEERING RECONNAISSANCE SURVEY
GOULDING LAKES - CHICHAGOF ISLAND

The Goulding Lakes are located on Chichagof Island, sixty miles north of Sitka, Alaska at latitude 57°48'30"N, Long. 136°13'00"W. The first lake discharges into Goulding Creek at an elevation of 20 feet and flows approximately 1½ miles to tide water at the head of Goulding Harbor.

There are two blocks in the lake system barring anadromous fish. The first barrier is located approximately 100 yards downstream from the outlet of the first lake and the second barrier is immediately upstream from the entrance to the first lake. There were no other blocks observed in an aerial reconnaissance of the lake system.

At the site of both blocks, the overburden is light with large areas of country rock exposed. The country rock appears to be Greenstone but Graywacke shale was observed in the rock debris at both blocks.

The first block in the Goulding Lakes system is made up of two falls approximately 150 feet apart. The first falls (Figure 1) consists of two cataracts approximately 15 feet high and 20 feet apart. The second block (Figure 2) is a cascade type falls and is approximately 150 feet upstream from the first block and rises 30 to 35 feet in a 75 feet run. The right side of the falls is made up of four chutes varying in height from 3 feet to 12 feet and runs of 3 feet to 30 feet horizontally. The left side of the falls consist of vertical drops of 5-10 feet with many large boulders and/or outcrops of country rock exposed.

On the left side of both falls there are small side channel (Figure 3 and 4) with minimum flows of 1 to 2 cfs. These channels consist of numerous small cascades varying in height from 4-10 feet and could be utilized for fish passage in combination with steeppass units by diverting water from the main channel. The primary consideration in using these side channels for fish passage would be attracting the migrants, as the first side channel (Figure 3) enters Goulding Creek approximately 250 feet below the first falls. The total difference in water surface elevations, Goulding Creek to the first lake is 65 feet.

The second block in the Goulding Lakes system lies in a steep walled canyon between the first and second lakes. The stream runs for approximately 100 feet (Figures 5 and 6) then makes a 90° bend (Figure 7) and continues on this course for approximately 200 feet (Figure 3) to the top of the falls. This barrier consists of seven cataracts varying in height from 3 feet to 25 feet in a total run of 300 feet. The total difference in water surface elevations, first lake to top of falls, is approximately 100 feet.

To open the lake system to anadromous fish would require construction o of approximately three miles of access road in addition to laddering 165 feet of falls. The first block could be laddered using steeppass units in the side channels, but the second block would require a standard weir structure as the slope appears too steep to utilize steeppass units. This would have to be determined by the topography

survey needed for planning purposes.

A preliminary cost estimate to ladder this system is as follows:

Top Survey 90 man days/$35.00	$3,200.00
Design & Planning & Inspection	10,000.00
3 miles Pioneer Road @ 50,000/mile	150,000.00
65 feet @ $1,000/feet rise	65,000.00
100 feet @ $2,000/feet rise	200,000.00
	$428,200.00

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George Cunningham

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